

# Food vs Non-Food Classification

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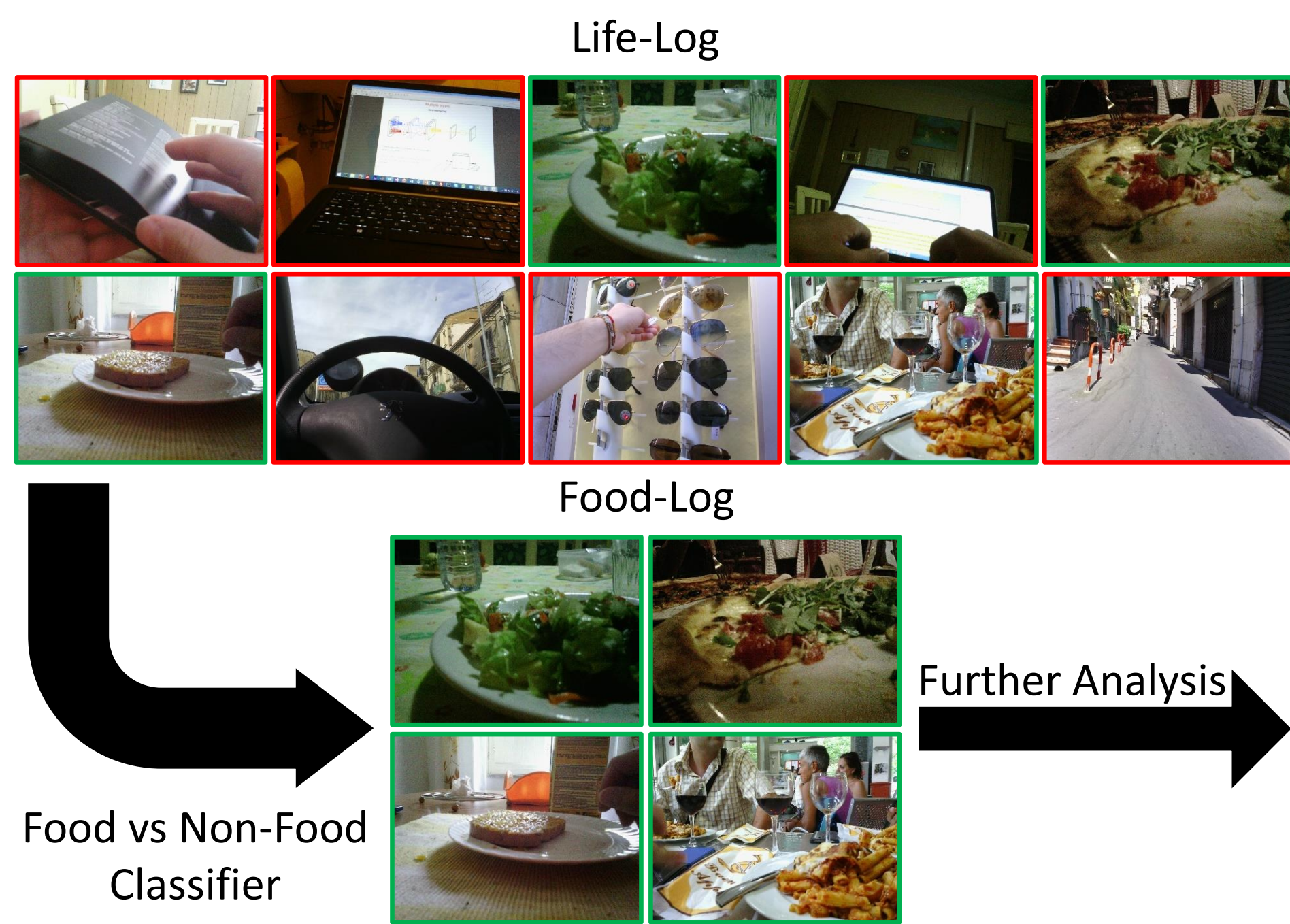
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## Food vs Non-Food Classification



Existing approaches been generally evaluated using different methodologies and data, making a real comparison of the performances of existing methods unfeasible. We consider the most recent classification approaches employed for food vs non-food classification, and compare them on publicly available datasets.

## Online Demo



<http://iplab.dmi.unict.it/demofood/>

## References

- [1] Giovanni Maria Farinella, Dario Allegra, Marco Moltisanti, Filippo Stanco, and Sebastiano Battiato. Retrieval and classification of food images. *Computers in Biology and Medicine*, 77:23–39, 2016.
- [2] Giovanni Maria Farinella, Dario Allegra, Filippo Stanco, and Sebastiano Battiato. On the exploitation of one class classification to distinguish food vs non-food images. In *International Conference on Image Analysis and Processing*, pages 375–383, 2015.
- [3] Giovanni Maria Farinella, Marco Moltisanti, and Sebastiano Battiato. Classifying food images represented as bag of textons. In *IEEE International Conference on Image Processing*, pages 5212–5216, 2014.

## Experiments

We consider three datasets:

1. **UNICT-FD889**: 3583 food images related to 889 different plates;
2. **Flickr-Food**: 4805 food images downloaded from Flickr;
3. **Flickr-NonFood**: 8005 non-food images downloaded from Flickr. Randomly divided into two asymmetrical halves containing 3483 and 4422 samples respectively.

Training is performed on UNICT-FD889 and the 3483 images of Flickr-NonFood. Testing is performed on

Flickr-Food and on the remaining 422 samples of Flickr-NonFood.

We consider three popular CNN models: **AlexNet**, **VGG** and **Network in Network** and the following classification schemes:

1. Binary SVM trained on CNN features;
2. One-Class SVM trained on CNN features;
3. Fine-tuned CNN network;
4. Binary SVM trained on finetuned CNN features;
5. One-Class SVM trained on finetuned CNN features.

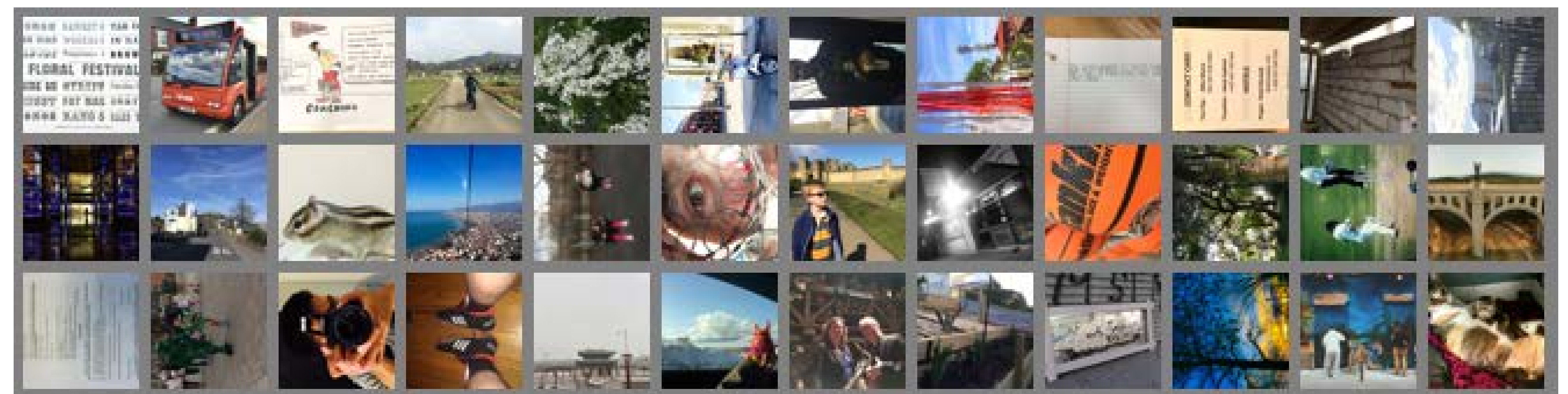
## Dataset



(a) UNICT-FD889 (<http://iplab.dmi.unict.it/UNICT-FD889/>)



(b) Flickr-Food (<http://iplab.dmi.unict.it/madima2015/>)



(c) Flickr-NonFood (<http://iplab.dmi.unict.it/madima2015/>)

## Results

